

REMARKS

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, claim 1 has been amended for clarity. The change to claim 1 is supported in the specification as filed on page 2, lines 22-34 and page 3, line 8 to page 4, line 5.

The Examiner has rejected claims 1, 4-8, 10-12 and 14-20 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,784,468 to Klayman in view of U.S. Patent 4,778,027 to Taylor, and further in view of U.S. Patent 6,154,549 to Arnold et al.

The Klayman patent discloses spatial enhancement speaker systems and methods for spatially enhanced sound reproduction.

The Taylor patent discloses a rhythmizer in which a sound-generating means is coupled to a structure.

The Arnold et al. patent discloses a method and apparatus for providing sound in a spatial environment.

Claim 1 includes the limitations "A device having a first and a second sound-generating means and an input for a stereo signal comprising left and right sound signals, wherein the device has an interconnected first and second part comprising the first and the second sound-generating means, respectively, the first part being formed so as to couple soundwaves generated by the first sound-generating means into a surface when said device is placed upon said surface, wherein coupling soundwaves into the surface results in a co-vibrating of (i) the first sound-generating means and (ii) the surface to form (iii) a spatially extended source, and

wherein the device has means for sending a first signal, being a first composite of the left and right sound signals, to the first sound-generating means of the first part, and a second signal, being a second composite of the left and right sound signals different from said first composite, to the second sound-generating means of the second part, wherein responsive to the co-vibrating of the first sound-generating means and the surface, a sound volume produced by said first part and said surface at a distance of one (1) meter from said first part is increased by at least 6 dB as compared to a sound volume produced by the first part when used in air and not coupled to said surface, and wherein, due to the soundwaves from the spatially extended source of the first sound-generating means and the surface, and the soundwaves from the second sound-generating means, the device provides a stereo sound sensation over a large area."

The Examiner has stated:

"Regarding claim 1, Klayman discloses a device having a first and a second sound-generating means (Figures 1 and 2; speaker assemblies 100 and 140), and an input for a stereo signal (Figure 1; column 4, lines 29-40) comprising left and right sound signals (Figures 1 and 2), and wherein the device has an interconnected first and second part comprising the first and second sound generating means (Figures 1 and 2; each speaker assembly includes a first and second sound generating means) , respectively, and wherein the device has means for sending a first signal which is a composite of the left and right sound signals, to the first sound-generating means of the first part), and a second signal, which is a different composite of the left and right sound signals, to the second sound-generating means of the second part (Figures 1 and 2; column 4, lines 44-49-63)."

Applicants would first like to note that the Examiner identifies the first and second sound generating means as the two separate speaker assemblies 100 and 140. Then the Examiner identifies the (same) first and second sound generating means as comprising each speaker assembly. In order to be clear, Applicants will assume the Examiner is referring to each of the speaker assemblies separately.

Applicants submit that Klayman finds it necessary to provide separate speaker assemblies 100 and 140 in order to achieve the desired spatially expanded stereo sensation.

The Examiner then continues:

"Klayman teaches of coupling sound waves (Figures 1-4). Klayman fails to teach of coupling sound waves generated by the first sound-generating means into a surface when placed upon said surface. Taylor teaches of coupling sound waves generated by a first sound-generating means into a surface when placed upon said surface (Figures 8 and 9; column 3, lines 60-column 4, line 20; column 4, line 61- column 5, line 2). It would have been obvious to modify Klayman so that the first sound generating means couples sound waves into a surface when placed upon said surface for the benefit of providing a better "feel" of the sound or music to the user."

Applicants do not contest this description of the teachings of Klayman and Taylor.

The Examiner now adds:

"Klayman as modified fails to disclose wherein responsive to the co-vibrating of the first sound-generating means and the surface, a sound volume produced by said first part at a distance of one meter from said first part is increased by at least 6 dB as compared to the same part when used in air.

"Arnold discloses that is also possible for a source to be resting on a hard, soundreflecting surface and

radiating hemispherical waves. Under those conditions, the sound intensity level $L_{sub.1}$ and the sound pressure $L_{sub.p}$ at a distance of one meter are 8 dB less than the sound power level, once again diminishing by 6 dB each time the distance is doubled. In actual practice, few sound sources radiate sound equally in all directions, and there are often reflecting surfaces nearby that destroy the symmetry of the spherical or hemispherical waves (column 7, line 62-column 8, line 3).

"Based on Arnold's teaching, the examiner asserts that it is a matter of design choice as to how the sound volume will be produced. Therefore, it would have been obvious to modify Klayman so that the sound volume is produced as claimed for the benefit of producing a specific desired output."

It appears that the Examiner is applying the teachings of Arnold et al. to the combination of Klayman and Taylor. As such, Applicants submit that Taylor teaches against what is disclosed in Arnold et al. In particular, Taylor, at col. 4, lines 12-21, states:

"It should be specifically noted that the configuration and disposition of the speakers 21 through 24 relative to the undersurface 16 of the support platform 12 and the exposed surface portion thereof 14 is such as to not make the support platform in fact a vibrating diaphragm part of the speakers themselves but rather, merely transmit the feel of the rhythmic vibration created upon activation of the speakers 21 through 24 and the emanation of sound therefrom preferably in the form of music."

As such, it should be apparent that Taylor does not show or suggest any increase in the sound volume as a result of such a coupling, but rather the transmittal of "the feel of the rhythmic vibration".

Arnold discloses a 3 dB improvement over using the source in free space as opposed to "resting" on the surface (11 dB decline

in free space at 1 meter, as opposed to 8 dB decline when resting on the surface), there is no disclosure of whether what is being measured is the sound emanating from the source itself or the combined source and the surface (as in the subject claimed invention).

Notwithstanding the above, Applicants therefore submit that despite the Examiner's assertion ("...it is a matter of design choice as to how the sound volume will be produced."), the subject invention is able to achieve double the results as set forth in Arnold et al. (6dB as opposed to 3 dB). As such, Applicants submit that Arnold et al. neither discloses nor suggests "wherein responsive to the co-vibrating of the first sound-generating means and the surface, a sound volume produced by said first part and said surface at a distance of one (1) meter from said first part is increased by at least 6 dB as compared to a sound volume produced by the first part when used in air and not coupled to said surface."

Applicants further submit that the combination of Klayman, Taylor and Arnold et al. does not disclose or suggest the claim 1 limitation "wherein, due to the soundwaves from the spatially extended source of the first sound-generating means and the surface, and the soundwaves from the second sound-generating means, the device provides a stereo sound sensation over a large area".

In view of the above, Applicants believe that the subject invention, as claimed, is not rendered obvious by the prior art,

either individually or collectively, and as such, is patentable thereover.

Applicants believes that this application, containing claims 1, 4-8, 10-12 and 14-20, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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